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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,668	08/05/2003	Cullen F. Jennings	062891.1110	7154

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BAKER BOTTS L.L.P.	
2001 Ross Avenue	
Dallas, TX 75201-2980	

EXAMINER	
YUN, EUGENE	

ART UNIT	PAPER NUMBER
2618	

MAIL DATE	DELIVERY MODE
07/25/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/634,668

Applicant(s)

JENNINGS, CULLEN F.

Examiner

Eugene Yun

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartkowiak et al. (US 5,809,133) in view of Simeon (US 2003/0123574).

Referring to Claim 1, Bartkowiak teaches a method for detecting a received signal comprising:

determining a set of particles each modeling a potential signal generated by a transmitter (see col. 3, lines 26-36);

measuring a received signal from the transmitter (see col. 5, lines 59-67);

selecting one of the particles based upon the distribution of the particles within a space of potential signals (see col. 13, lines 20-25); and

outputting the potential signal modeled by the selected particle (see col. 14, lines 56-60).

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Bartkowiak does not teach calculating a probability for each of the particles, the probability for a particle indicating likelihood of the potential signal modeled by the particle based upon the received signal; and

redistributing the particles within a space of potential signals that may be generated by the transmitter based upon the probabilities.

Simeon teaches calculating a probability for each of the particles, the probability for a particle indicating likelihood of the potential signal modeled by the particle based upon the received signal (see paragraph [0024]); and

redistributing the particles within a space of potential signals that may be generated by the transmitter based upon the probabilities (see paragraph [0025]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teachings of Simeon to said device of Bartkowiak in order to improve accuracy while reducing cost.

Claims 19 and 28 have similar limitations as claim 1.

Referring to Claim 10, Bartkowiak teaches a receiver comprising:

a memory maintaining data detailing a space of potential signals that may be generated by a transmitter (see col. 6, lines 53-55); and

a signal selection module operable to select one of the particles based upon the distribution of the particles within the space of potential signals and to output the potential signal modeled by the selected particle (see col. 13, lines 20-25 and col. 14, lines 56-60).

Bartkowiak does not teach a distribution module operable to determine a set of particles each modeling a potential signal from the space of potential

signals and to redistribute the particles within the space of potential signals based upon probabilities for each of the particles; and

a probability module operable to measure a received signal from the transmitter and to calculate a probability for each of the particles, the probability for a particle indicating likelihood of the potential signal modeled by the particle based upon the received signal.

Simeon teaches a distribution module operable to determine a set of particles each modeling a potential signal from the space of potential signals and to redistribute the particles within the space of potential signals based upon probabilities for each of the particles (see paragraph [0025]); and

a probability module operable to measure a received signal from the transmitter and to calculate a probability for each of the particles, the probability for a particle indicating likelihood of the potential signal modeled by the particle based upon the received signal (see paragraph [0024]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teachings of Simeon to said device of Bartkowiak in order to improve accuracy while reducing cost.

Referring to Claims 2, 11, and 20, Bartkowiak also teaches measuring, calculating, and redistributing for a plurality of iterations, wherein over the course of the iterations, at least some of the particles converge upon a particular signal within the space of potential signals (see col. 11, lines 19-29).

Referring to Claims 3, 12, and 21, Bartkowiak also teaches determining that the concentration of the particles within a particular portion of the space of

potential signals exceeds a threshold concentration, and in response to determining that the concentration exceeds the threshold concentration, selecting the one of the particles from within the particular portion of the space of potential signals (see col. 4, lines 10-21).

Referring to Claims 4, 13, and 22, Bartkowiak also teaches measuring, calculating, and redistributing for a plurality of iterations, wherein each of the iterations provides information for a portion of each of the potential signals modeled by the particles (see col. 11, lines 19-29).

Referring to Claims 5, 14, and 23, Bartkowiak also teaches each of the potential signals modeling a sequence of values, and wherein each of the iterations provides measurements directed to a particular value from the sequence (see col. 18, line 62 to col. 19, line 3).

Referring to Claims 6, 15, and 24, Bartkowiak also teaches the sequence of values characterized by an error correction code, the method further comprising selecting the one of the particles based upon the distribution of the particles within the space of potential signals and the error correction code (see col. 17, lines 36-45).

Referring to Claims 7, 16, and 25, Bartkowiak also teaches monitoring processing resources to determine available ones of the processing resources, and determining a number of the particles to assign to signal detection based upon the available processing resources (see col. 20, lines 1-12).

Referring to Claims 8, 17, and 26, Bartkowiak also teaches determining a number of the particles to assign to signal detection based upon an assigned quality of service level (see col. 17, lines 36-45).

Referring to Claims 9, 18, and 27, Bartkowiak also teaches performing the steps of measuring, calculating, and redistributing for a plurality of iterations, wherein for each of the iterations, the step of redistributing removes unlikely ones of the particles and multiplies likely ones of the particles such that the number of particles in each of the iterations remains constant (see col. 11, lines 19-29).

Response to Arguments

4. Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Yun whose telephone number is (571) 272-7860. The examiner can normally be reached on 9:00am-6:00pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew D. Anderson can be reached on (571)272-4177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Eugene Yun
Examiner
Art Unit 2618

EY


MATTHEW ANDERSON
SUPERVISORY PATENT EXAMINER